

XII. Hymenoptera aculeata, *collected* by the Rev. ALFRED E. EATON, M.A., in *Madeira and Tenerife*, in the spring of 1902, including notes on species taken by the late T. VERNON WOLLASTON and F. A. BELLAMY. By EDWARD SAUNDERS, F.R.S., F.L.S., etc.

[Read March 18th, 1903.]

IN the little collection enumerated below, made by Mr. Eaton in the above islands, there are several species of interest. I have described four which appear to be new, and besides these two or three will probably prove so when more material comes to hand. A curious variety of *Bombus terrestris*, L., is worthy of special notice, it is quite black with the exception of the apex of the abdomen which is snowy white. Mr. Eaton captured three males and two workers, and remarks that the species is common in Tenerife, and as he sent no ordinarily-coloured specimens, I presume that this is the usual form in the island. Brullé does not mention *terrestris* as a Canary Island species, *sorocensis* being the only representative of the genus which he records, and I cannot help having a suspicion that he has mistaken this black var. of *terrestris* for the similarly coloured form of *sorocensis* which is well known on the Continent. So little is known of the Hymenoptera of these islands that I thought the present communication might be acceptable to the Society.

Since this paper was read, I have had placed in my hands by Prof. Poulton two collections from the Hope Department of the University of Oxford—one from Madeira made in 1847 and following years by the late T. V. Wollaston, and one made last year at Tenerife by Mr. F. A. Bellamy; as these contain several species not included in my paper, I have, at Prof. Poulton's suggestion, incorporated them.

Wollaston's collection was purchased in 1861 by the Rev. F. W. Hope, and presented to the Oxford University Museum. The specimens are of course old and more or less faded, the smaller ones are often gummed on cards, which

renders determination doubtful, and as it would be dangerous to remove specimens of this age I have not attempted to found any new species on them. At the same time there is a bronzy *Halictus* which I think will prove to be new, and also a ♀ *Prosopis* entirely black with the exception of the yellow facial spots; it is larger than the species described here and stands in the collection with a label under it in F. Smith's handwriting—n. sp.? allied to *signata*. It is represented by a single specimen only and is not referable to any species I know.

In spite of the poor condition of Wollaston's specimens it is important to record, as far as possible, the forms which existed over half a century ago in an island so liable to accidental immigration as Madeira.

Professor Forel has kindly examined the ants of the collection and verified those already determined by Mr. F. Smith. I am indebted also to Mons. J. Vachal, who has recently examined Brullé's Canary Island types in the Paris Museum, for confirming, and in some cases correcting my identifications of the *Halicti*.

In Mr. Bellamy's collection is a fine series of the dark form of *terrestris* mentioned above, including six females, all coloured exactly like those met with by Mr. Eaton. As all the specimens of both collections came from Tenerife, it would be interesting to ascertain if the species has the same coloration in the neighbouring islands.

In the following list Mr. Bellamy's captures are indicated by his name, the late T. V. Wollaston's by his initials, while all specimens not specially indicated were taken by Mr. Eaton.

CAMPONOTUS RUFOGLAUCUS, Jerd., r. micans, Nyl.

♂ 7. Orotava, Tenerife. F. A. Bellamy, 31. iii.
to 7. iv. 02.

LASIUS NIGER, L.

♂ ♀ ♂. Many of each. Madeira. T. V. W.

TAPINOMA ERRATICUM, Ltr.

♂ ♀ ♂. Several of each. Madeira. T. V. W.

PLAGIOLEPIS PYGMEA, Ltr.

♀ ♂. Numerous. Madeira. T. V. W.

PONERA CONTRACTA, Ltr.

♀ 2 ♂ 6. Madeira. T. V. W.

TETRAMORIUM SIMILLIMUM, Nyl.

♂ 2. Madeira. T. V. W.

LEPTOTHORAX UNIFASCIATA, Ltr.

♂ 4. Madeira. T. V. W.

MONOMORIUM SALOMONIS, r. subopacum, Smith.

♀ ♂. Numerous. Madeira. T. V. W.

MONOMORIUM CARBONARIUM, Smith.

♂ 2 ♀ 4 ♂ 5. Madeira. T. V. W.

PHEIDOLE MEGACEPHALA, Fab.

♀ ♂. Several. Madeira. T. V. W.

TACHYSPHEX SIMONYI, Kohl.

2 ♂ 1 ♀. Orotava, Tenerife; on the sea-shore, 20 and 21. iii. 02.

MISCOPHUS EATONI, n. sp.

Niger nitidus subaeneo-micans, facie punctatissima, mandibulis testaceis, apicibus piceis; alis hyalinis, margine apicali late infuscata, propodeo transverse rugoso, medio canaliculato, lateribus oblique striatis, abdomine nigro, punctato et microscopice ruguloso, segmentorum apicibus subpiceis, pedibus nigris.

♀ Black, shining, head and thorax in certain lights with a very slight bronzy tinge, face very slightly convex, so closely punctured as to be almost dull, a very fine smooth line extends from between the antennæ to about halfway between their insertion and the anterior ocellus. Clypeus more shining than the rest of the face, slightly raised down the centre, its anterior margin reflexed and rounded in the centre. Mandibles testaceous darker at the base and apex. 3rd joint of the antennæ slightly longer than the following ones, vertex shining, less closely punctured than the face; ocelli equidistant from each other, cheeks posteriorly with a few short glittering pale golden hairs, thorax shining and punctured like the vertex of the head, wings hyaline, with a well-defined darker apical band, not quite extending to the cell nerves, area of the petiolated cell of much less extent than that of the radial, mesopleuræ distinctly punctured, legs entirely black, propodeum shining transversely and somewhat diagonally rugose, with a well-defined central sulcature, its sides

diagonally strigose, and clothed with very short inconspicuous pale golden hairs, abdomen black, finely punctured and microscopically rugose between the punctures, posterior margins of the segments slightly piceous, and with a very insignificant fringe of white hairs at the sides, beneath finely and closely punctured, the posterior margins with a few long exerted hairs.

Long. 5 mm.

Of this very distinct species, one specimen was taken at Orotava, Tenerife, on waste ground near the road beyond the Cemetery gate—21. iii. 02.

AMMOPHILA (*Psammophila*) TYDEI, Guill.

♂ 1. Laguna. Hill-side east of the city, about 2000 feet altitude, 15. iii. 02.

Orotava. "Common, provisions its nest with the larva of a Noctuid moth."

AMMOPHILA (*Psammophila*) HIRSUTA, Scop.

♂ 2 ♀ 2. T. V. W. These were named by F. Smith, "*Maderæ*, Dhb.," but are I think referable to the var. of *hirsuta*, which has pale hairs on the propodeum; I have taken similar specimens in Jersey and at St. Briac in Brittany.

SCELIPHRON TUBIFEX, Latr.

♂ 1 ♀ 3. Madeira. T. V. W. All these have the pedicel of the abdomen black.

OXYBELUS TEGULARIS, sp. n.

Niger, abdomine flavomaculato, propodei mucrone apice dilatato emarginato, tegulis nervisque basalibus alarum læte testaceis, pedibus nigris, testaceo flavoque variegatis.

This species resembles *lutro*, Dahlb., in the widened emarginate propodeal spine, but differs widely from it in other characters and is specially recognizable by the bright testaceous tegulæ.

Black, without any bronzy tinge, head and thorax densely, rugosely and closely punctured, mandibles red in the centre, flagellum of the antennæ red towards the apex, clypeus tridentate at the apex in both sexes, with a strong central keel in the ♂ which projects beyond the anterior margin on to the central tooth, and a short angular keel in the ♀ abbreviated before it reaches the anterior margin, which is smooth and shining; face clothed with glittering

silvery hairs, vertex rather densely with short greyish-white ones, those on the cheeks behind the eyes short and silvery.* Mesonotum clothed with short greyish hairs with a narrow central keel posteriorly, extending on to the scutellum, tegulae and bases of wing-nerves bright testaceous, rest of neuration brown—postscutellum longitudinally strigose, lamellae pale; legs black, anterior tibiae and tarsi except the former posteriorly, in both sexes, and all the tarsi in the ♂, testaceous, bases of the intermediate and posterior tibiae flavous, the pale colour more extensive in the ♂; calcaria pale, intermediate and posterior tarsi black in the ♀, posterior metatarsi piceous in the ♂, propodeal spine short, widened and emarginate at the apex, central area shining, more or less diagonally rugose on each side, lateral areas dull, with irregular transverse rugosities, sides shining, transversely strigose; abdomen more shining in the ♀ than in the ♂, strongly punctured, clothed with grey adpressed pubescence, especially in the ♂, puncturation of the basal segment slightly larger and less close than on the following, ♂ with a narrow transverse yellow spot on each side of the apical margin of the first 5 segments, these become longer and more band-like as the segments approach the apex, in the ♀ the spots are paler and only occur on the first 2 or 3 segments; in the ♂ the 3rd, 4th, 5th and 6th segments have a short testaceous spine-like tooth at the posterior angle.

Long. 5—7 mm.

Orotava, Tenerife, several ♂ and ♀, 20. iii. 02.

VESPA GERMANICA, Fab.

♀. Monte Funchal, Madeira, above the Church, at about 2000 feet altitude, visiting *Scrophularia*, two or three examples at the same individual plant, 4. iii. 02.

♀ 1. Funchal, altitude 3000 feet (E. S. Goodrich, in Hope Collection), 3. i. 01.

♀ 2 ♀ 2. Madeira. T. V. W.

♀ 6. Orotava, Tenerife, March and April 1902. F. A. Bellamy.

The black on the abdomen of some of Mr. Bellamy's specimens is very extensive, quite as much so as in dark examples of *Vespa vulgaris*.

POLISTES GALLICUS, L.

♀ 3. Madeira. T. V. W.

ODYNERUS CRUENTATUS, Brullé.

♂ and ♀. Orotava, Tenerife, westward of the port.

ODYNERUS HEMATODES, Brullé.

♀ 1. La Laguna, Tenerife. Hillside to left of main road to Tejina along a terrace of volcanic rock. Altitude about 2200 feet, 15. iii. 02.

♀ 1. Sauzal. Altitude about 900 feet, 4. iv. 02.

♂ 1 ♀ 2. Madeira. T. V. W.

PROSOPIS, sp. ?

Madeira. T. V. W.

Carded and marked in collection as n. sp. allied to *signata*.

PROSOPIS ATRA, n. sp.

Omnino nigra, facie maris flava, antennarum utroque sexu flagello subtus testaceo exceptis, genis brevissimis, abdominis segmento basali remote punctato, ruguloso, in femina microscopice, apice lineâ laterali pilorum albidorum ornato.

Entirely black in the ♀; ♂ with the face and a spot on the anterior side of the front tibiæ yellow, flagellum of the antennæ in both sexes more or less testaceous beneath, wings hyaline, the nervures brownish-black.

♂ Head and thorax and first joint of the antennæ clothed with long pale hairs, face yellow, of the same colour as in *communis*, the colour not or rarely extending above the insertion of the antennæ, clypeus black at the apex, mandibles black, antennæ with the first joint curved but scarcely dilated, cheeks linear, vertex strongly and closely punctured, thorax strongly punctured, but less closely than the head, the intervals microscopically rugose, propodeal area reticulate, abdomen somewhat dull, rugulose, punctured, puncturation of the first segment fine and remote, that of the others, closer and less definite, apex of the 1st segment with a very ill-defined fringe of white hairs at the sides, and 8th ventral segment formed much as in *pictipes*, Nyl., but the apical wings of the 7th are narrower and longer, and are twisted downwards at an angle of about 60 degrees from the horizontal basal plates, and are in this respect quite unlike those of any species I know—armature with the stipites more or less pointed, with very long apical hairs. Sagittæ wide, paler, and slightly longer than the stipites, each gradually narrowing to a rather blunt apex.

♀ punctured and sculptured much as the ♂, but the abdomen more

shining, with quite microscopic rugulosity on the basal segment as in *genalis*, face short, cheeks linear, orbital furrows much produced posteriorly, slightly curved at their termination near the base of the posterior ocelli, propodeal area smoother than in the ♂, the reticulations almost obsolete except at the base, basal segment of abdomen with a distinct very narrow line of snowy-white pubescence; calcaria pale.

Long. 5 mm.

Orotava, visiting *Frankenia*, ♂ 3, 21. iii. 02.

Laguna, Tenerife, ♀ 1. 2 or 3 kilom from the city upon the ridge to the left of the Tejina road. Altitude 2100—2500 feet.

Sauzal, ♂ 1. Altitude about 900 feet.

HALICTUS, sp.?

♂ and ♀. Madeira. T. V. W.

This pair is named *quadririgatus* in the collection, but neither ♂ nor ♀ is I think referable to that species, and in this opinion Mons. Vachal agrees; whether they are ♂ and ♀ of one species is also doubtful; the ♂ has the clypeus entirely black; the ♀ is in such bad condition that it is impossible to be sure of its identity, and I hesitate to describe a new species on a single ♂.

HALICTUS, sp.?

♀ 3. Laguna, 15. iii. 02.

Closely allied to, if not a variety of *H. scabiosæ*, Rossi, but without knowing the other sex, I am afraid to determine it for certain, as there are already several closely allied forms described in the group whose specific value is very doubtful; Brullé (Webb-Berthelot, Hist. Can. ii, p. 87) records *scabiosæ* as occurring in the islands, but remarks that he has only seen one ♂, which differs from *scabiosæ* in having the antennæ beneath entirely yellow; this makes me suspect that Brullé's ♂ and these ♀s may belong to a distinct Canary Island species.

HALICTUS, sp. (?).

♀ Madeira. T. V. W.

In Wollaston's collection there is a single ♀ under the name *zebrus*, Walek., but it is in such a condition as to render identification practically impossible.

HALICTUS VILLOSULUS, Kirb.

- ♀ 1. Monte Funchal (Madeira). Sheltering on a flower of *Vinca Major*, 27. ii. 02.
 ♀ 2. Monte Funchal (Madeira). Sheltering on *Crepis* and *Taraxacum officinale*, 4. iii. 02.
 ♀ 4. Laguna (Tenerife), 15. iii. 02.
 ♀ 2. Madeira. T. V. W.

These females do not quite agree in all points with British examples of the above species, but I see no distinctive character to rely upon, so without seeing the ♂ I think it is wiser to treat them as belonging to it. Mons. Vachal, to whom I submitted a specimen, returned it to me as *villosulus*?

HALICTUS ALCEDO, Vachal.

- ♂ 1. Laguna, Tenerife. Hillside, east of the city, about 2000 feet altitude.

HALICTUS LÆTUS, Brullé.

- ♀ 1. Orotava, Tenerife, at la Cabezas, 24. iii. 02.

HALICTUS, n. sp.

- ♀ 1. Monte Funchal, Madeira, on *Sonchus oleraceus*, 1500 feet altitude, 27. ii. 02.

Allied to *Morio*, F., but more strongly punctured. In the Wollaston collection there are two ♂ and two ♀ of I believe the same species, but they are on cards and therefore no satisfactory description can be made from them; the males are peculiar in having very large heads and unusually ovate bodies.

HALICTUS VIRIDIS, Brullé.

- ♀ 4. Orotava, Tenerife, on *Oxalis* by the sea-shore, 20 and 23. iii. 02.
 ♀ 2. Laguna, Tenerife, 25. iii. 21—7. iv. 02. F. A. Bellamy.

I am indebted to Mons. Vachal for the determination of this species, as I had described it as new. I was misled by Brullé's remark: "Elle est revetue d'un duvet blanchâtre non seulement sur tout le corp mais aussi sur les pattes"—in the specimens I have seen this rubbed off, but traces of it are left on portions of the abdomen; also he gives the

size as that of *subaurata*, Rossi, whereas it is almost as large as *cylindricus*, F., but as Mons. Vachal saw Brullé's types in Paris recently there can be no doubt that his identification is correct.

HALICTUS ARCTIFRONS, n. sp.

Niger, abdominis segmento basali apice, segmentis 2, 3 et basi segmenti 4, testaceis, calcaribus pallidis, 3-spinosis, abdomine crebre punctato.

♀ closely allied to *H. angustifrons*, Vachal (Bull. Soc. Ent. Fr., 1892, p. xxii), to which at first I was inclined to refer it, but on communicating a specimen to the author he very kindly points out that it differs from his species in being stouter and having the posterior calcaria tridentate whereas in *angustifrons* they are 4-5 pectinate, and also in having the 2nd transverse cubital nerve united with the 1st recurrent, whereas in *angustifrons* the 1st recurrent is received into the 2nd cubital cell at about a quarter of the length of the cell from its apex. In colour it seems to agree well with *angustifrons*, the head and thorax are black and the abdomen black at the base and apex and testaceous red from the middle of the basal segment to the middle of the 4th. The eyes converge rather rapidly so as to give the face rather an elongate triangular aspect, the head and thorax are closely punctured and clothed with whitish hairs, and there is a line of dense white pubescence in the anterior depression of the pronotum and also in the depression bordering the mesonotum, postscutellum also densely clothed with whitish pubescence, propodeum with its basal area shallow and semi-circularly bounded, finely clathrate at the base, shining at the apex on the brow; abdomen closely punctured, the puncturation of the basal segment slightly less close than that of the 2nd, legs black clothed with whitish hairs, apex of posterior metatarsi with a tuft of golden bristly hairs.

Long. 5 mm.

Orotava by the sea-shore, visiting *Frankenia*, 20 and 23. iii. 02.

ANDRENA BIMACULATA, Kirby? var.

♂ and ♀. Madeira. T. V. W. In too bad condition to determine for certain.

ANDRENA BIPARTITA, Brullé.

♀ 2. Orotava, Tenerife, 21. iii. 02.

ANDRENA MINUTULA, Kirb.

♂ 2. Monte Funchal, Madeira, 6. iii. 02. At about 1100 feet altitude.

♂ 1 ♀ 2. Madeira. T. V. W.

These are I believe referable to *minutula*, but belong to the form which has the mesonotum rugulose and with very distant, shallow punctures. We have similarly sculptured specimens in England, but those I possess belong to the second brood, whereas the males of this collection have the long-haired face of the first brood.

OSMIA LATREILLEI, Spin.

♂ 2 ♀ 1. Laguna, Tenerife, 15—17. iii. 02. At altitudes of 2000—2200 feet.

♂ 4 ♀ 4. Madeira. T. V. W.

OSMIA SUBMICANS, Mor.

♂ 2. Laguna, Tenerife, 16. iii. 02. "Hill north of the city, at about 2150 feet altitude and under."

MEGACHILE APICALIS, Spin.

♂ 2. Orotava, Tenerife, 21. iii. 02.

MEGACHILE, sp. ?

♂ 1. Madeira. T. V. W.

In bad condition, but apparently closely allied to *versicolor*, Smith, with similar pale apical joints to the tarsi.

PODALIRIUS QUADRIFASCIATUS, Villers.

♂ 6 ♀ 3. Madeira. T. V. W.

Of the usual Madeiran type with fulvous bands = var. *Maderæ*, Sichel.

PODALIRIUS CANARIENSIS, n. sp.

Niger clypeo maris triangulariter albosignato, facie albido-hirta in lateribus pilis nigris intermixtis. Thorace albido-hirta fasciâ interalari nigrâ abdominis segmento primo albido-hirta, reliquis nigrohirtis fasciis interruptis apicalibus ornatis. ♂ metatarsis intermediis ciliis nigris postice dense vestitis.

Although so like *atroalba*, Lep., as to be scarcely distinguishable in the ♀, the ♂ is abundantly distinct in

coloration and especially in the disposition of the black hairs on the intermediate metatarsi; these are arranged much as in *balcaricus*, Freise, all being on the posterior side of the joint.

♂ and ♀ very similar in coloration; black, the ♂ having a triangular spot on the clypeus, sometimes a more or less extensive spot on the labrum and a line on the front of the scape yellowish-white; in both sexes the hairs of the face are white intermixed with black. The face in the ♀ is very broad, and the cheeks between the eyes and mandibles very short, labrum clothed with silvery hairs. The thorax is clothed with grey and black hairs intermixed above, with nearly black hairs on the sides beneath the wings and with paler hairs round the propodeum, abdomen clothed with greyish-white hairs on the basal segment, with black hairs on the others, the 2nd, 3rd and 4th segments with a band of snowy-white rather long hairs at the apex, slightly narrowed at the sides and broken in the centre, legs clothed with black hairs, the intermediate and posterior tibiae in both the ♂ and ♀ with bright silvery hairs exteriorly and the metatarsi of the same legs in the ♂ with silvery hairs at the apex, intermediate metatarsi with a dense fan of black hairs on its posterior side, in the ♀ the silvery hairs of the scopæ have a somewhat golden tinge.

Long. 12-13 mm.

La Laguna, Tenerife. Hill-side on left-hand side of main road to Tejuna, nesting in cavities of volcanic rock, altitude about 2200 feet, males only.

The ♀ which I associate with this ♂ is from the collection of Mr. Morice taken in Tenerife, it very closely resembles that sex of *atroalba*, but the face is wider, its hairs are mixed with black, whereas in *atroalba* they are all white. The hairs of the labrum are silvery and not dull grey, and the bands of the abdomen are of much longer hairs.

BOMBUS HORTORUM, Linn.

♀ 1. Monte Funchal, Madeira, 17. ii. 02.

"In garden of Belmonte Hotel, visiting *Azalea*: nest subterranean, common between 1450—1700 feet." Differs only from the ordinary type in having the hairs of the apical segments of a brownish tinge, and the hairs of the scopæ more or less reddish.

♂ 2 ♀ 3. Madeira. T. V. W. Similar to the above in coloration.

BOMBUS TERRESTRIS, Linn.

♂ 3 ♀ 2. Laguna, Tenerife, 14—16. iii. 02. Altitude 1900—2200 feet. "A common species."

Numerous ♂ ♀ and ♀ various localities in Tenerife.
F. A. Bellamy. March and April 1902.

All the specimens are entirely black, with only the apex of the abdomen white. A very unusual variety of this species; the ♂ armature, however, is like that of normal specimens.